HomeLink™ Series

Phoneline 10M Cable/DSL Router

Use this guide to install: HPRO200

User Guide

LINKSYS®

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Introduction

The Linksys HomeLink™ Phoneline 10M Cable/DSL Router

The HomeLink™ Phoneline 10M Cable/DSL Router provides the perfect solution for connecting to high-speed broadband Internet through your existing telephone lines. This HomeLink™ Phoneline 10M Cable/DSL Router from Linksys acts as the only externally recognized Internet gateway on your Local Area Network (LAN) and can be configured to regulate internal users' access to the Internet and serve as an Internet firewall against unwanted outside intruders.

Do you want to share your cable or DSL modem on your HomeLink™ Phoneline network? Add a PC anytime by simply connecting it to a telephone jack in your wall, providing for instant communication throughout your home. The groundbreaking technology inside every HomeLink™ Phoneline 10M Cable/DSL Router delivers Internet and network connectivity at speeds of up to 10Mbps.

Features

- Share Your Cable/DSL Connection with Every PC in Your House Using Standard Telephone Lines
- Bridge Your Home Phoneline Network to an Ethernet Network and Share Broadband Access Between Them
- Add a PC to Your Home Network Simply By Plugging Your PC's Home Phoneline Network Adapter Into a Standard Phone Jack
- Provides Exceptional Network Security with the Built-In NAT Firewall
- An All-In-One Box for Internet Sharing Through Ethernet and Home Phoneline Networks
- Easy Manageability Through Your Web Browser
- Secure Your Network With Network Address Translation (NAT)
- Works With Your PC's Home Phoneline Network Adapter to Create an Internet-Sharing Home Network
- Supports Port Filtering, IP Filtering, and MAC Filtering
- Built-In Ethernet-to-Home Phoneline Network Bridge for Local Computer Connections
- Fully HomePNA 1.0, 1.1 and 2.0-Compatible
- Easy Installation—No Software Required
- Free Technical Support—24 Hours a Day, 7 Days a Week for North America Only
- 1-Year Limited Warranty

Package Contents

- One HomeLink™ Phoneline 10M Cable/DSL Router
- One AC Power Adapter
- One User Guide and Registration Card

System Requirements

- Windows 95, 98, Millennium, NT 4.0, or 2000
- Pentium-Grade CPU or better
- 32 MB of RAM
- Microsoft IE 4.0 or higher, Netscape Navigator 4.06 or higher
- An Ethernet or Home Phoneline Adapter with TCP/IP Protocol for each PC

Getting to Know the HomeLink Phoneline 10M Cable/DSL Router

The HomeLink Phoneline Router's Rear Panel Ports

Phone
Use this port for connecting your telephone. It employs a microfilter for signal clarity. Do not plug your telephone into any of the other ports.

HPNA
Use the **HPNA** ports to connect your Home Phoneline Router to your HomeLink network. These ports are configured as pass-through ports, meaning that the network data travels into the Home Phoneline Router through one of the HomeLink ports, then continues out the other. Connect one HomeLink telephone cable into one of the ports, then continue (with another cable) to your next HomeLink device through the port's other side.

LAN
Connect an Ethernet PC (or an Ethernet device) to your HomeLink phoneline network through one of the HomeLink Phoneline Router's 10BaseT ports.

WAN
Share your Internet access over your entire Home Phoneline or Ethernet network by connecting to your DSL or Cable modem through the Home Phoneline Router's WAN port. The **Uplink** port can also connect to Ethernet devices such as hubs, routers, and switches. If the **Uplink** port is used, the port right next to it (LAN) will be inoperable. Any connections made through a LAN will be lost.

Crossover Switch
The Crossover Switch (X II) toggles the LAN port between crossover mode (**X**) and straight-through mode (**II**). If you are connecting the Router directly to a computer or to an Uplink port, choose crossover (**X**). For anything else, choose straight-through (**II**).

Power
Connect your power adapter to your HomeLink Phoneline Router through the **Power** port.

The Reset Button*

Briefly pressing the Reset Button will refresh the HomeLink Phoneline Router's connections, potentially clearing any jammed links.

Pressing the Reset Button and holding it in for a few seconds will clear all of the HomeLink Phoneline Router's data and settings. This should be done only if you are experiencing heavy routing problems, and only after you have exhausted all of the other troubleshooting options. By resetting the HomeLink Phoneline Router, you run the risk of creating conflicts between your PCs' actual IP Addresses and what the HomeLink Phoneline Router thinks their IP Addresses should be. You may be forced to reboot the entire system(s).

If your HomeLink Phoneline Router locks up, simply power it down for 3 to 5 seconds by removing the power cable from the Router's Power Port. Leaving the power off for too long could result in the loss of network connections.

The HomeLink Phoneline Router's Front Panel LEDs

Power   The **Power** LED will light up when the HomeLink Phoneline Router is powered on. Note that there is no ON/OFF switch; simply plug in the power adapter.

The LAN Indicators

Link/Act   *Green*. The **Link/Act** LED serves two purposes. If the LED is continuously illuminated, the HomeLink Phoneline Router is successfully connected to a device. If the LED is flickering, the Router is actively sending or receiving data over that port.

Full/Col   *Green*. The **Full/Col** LED also serves two purposes. If this LED is continuously illuminated, the connection is successfully running in Full Duplex mode. If the LED is flickering, the connection is experiencing collisions. Infrequent collisions are normal. If this LED is flickering too often, there may be a problem with your connection. Check the Troubleshooting section if you think there is a problem.

100   *Orange*. The **100** LED illuminates when a successful 100Mbps connection is made through the corresponding port.

The WAN Indicators

Link   *Green*. The **Link** LED illuminates when a successful connection is made between the HomeLink Phoneline Router and your Broadband device or network.

Act   *Green*. The **Act** LED flickers when the HomeLink Phoneline Router is sending or receiving data over the broadband port.

Diag   *Red*. The **Diag** LED illuminates when the HomeLink Phoneline Router goes through its self-diagnosis mode during boot-up. It will turn off upon successful completion of the diagnosis. If this LED stays on for an abnormally long period of time, refer to the Troubleshooting section.

The HPNA Indicators

Link   A **Link** LED will light up when the port successfully connects to your phoneline network.

Act   *Green*. The **Act** LED flickers when the HomeLink Phoneline Router is sending or receiving data over the HPNA port.

Col   If the **Col** LED is flickering, the connection is experiencing collisions. Infrequent collisions are normal. If this LED is flickering too often, there may be a problem with your connection. Check the Troubleshooting section if you think there is a problem.

Using the HomeLink Phoneline 10M Cable/DSL Router

Installation Overview

Since the HomeLink Phoneline 10M Cable/DSL Router is a stand-alone device that requires no software or system configuration, its setup involves nothing but plugging everything in and turning all your hardware on. However, there are a few limitations to the amount of physical distance your network can cover without running the risk of data corruption. These restrictions are due to Home Phoneline and Ethernet standard limits on the recommended length of your networking cables, as shown below.

Ethernet Cabling

Although there are different grades of Ethernet network cabling, you should use UTP Category 5 (unshielded twisted-pair) cables for each Ethernet connection you make, and no Ethernet cable should exceed 100 meters (328 feet) in length. Category 5 cabling is available at most computer stores, or you can crimp your own network cables. See the **Crimping Your Own Network Cables** section of the Appendix for details on crimping.

HomeLink Phoneline Cabling

Due to the limitations of standard telephone cables, HomeLink phoneline devices require that no network of HomeLink cabling exceeds a total length of 300 meters (1000 feet). In other words, if you have more than 500 feet of telephone wires connecting your network, you will be more likely to experience data loss.

Any standard telephone cable will do.

Connecting the HomeLink Phoneline Router to Your Network

The following instructions will have your HomeLink Phoneline Router up and running in minutes.

> **Note**: *Power everything off before connecting PCs to the HomeLink Phoneline Router. If both the PC and the Router are powered on when the initial connection is made, the network may act erratically and you will have to reset the Router.*

Basic Installation

1. **Make sure that every component of your network** (including any PCs and the HomeLink Phoneline Router) is powered off.

2. **Connect your Ethernet device to the HomeLink Phoneline Router** through the HomeLink Phoneline Router's LAN port. If you have several Ethernet devices, connect the HomeLink Phoneline Router to a 10/100 Ethernet hub or switch. Ethernet devices should be connected to the HomeLink Phoneline Router with a network cable that is less than 100 meters (328 feet) in length.

3. **Connect the network cable** from your Cable or DSL modem to the **WAN** port on the rear of the HomeLink Phoneline Router.

4. **Connect the HomeLink Phoneline Router to the HomeLink network** by connecting telephone cable, plugged into your home's telephone jacks, to one of the HomeLink Phoneline Router's HPNA ports. The entire length of telephone cable used in a HomeLink network should never exceed 300 meters (1000 feet). An addition HPNA port and LAN port is provided if you prefer to daisy-chain the PCs in your home network. For more detailed information on daisy chaining, see the next page.

5. **Power everything on**. Connect the supplied power cord to the power adapter, then to the **Power** port on the rear of the Homelink Phoneline Router. Plug the power cord into an electrical outlet.

The HomeLink Phoneline 10M Cable/DSL Router installation is now complete.

Daisy-chaining a HomeLink Network

Daisy-chaining your HomeLink PCs and peripherals can create a simple net-work that acts in the same way an Ethernet network acts on your PC's desktop.

While Ethernet networks usually revolve in a star topology around a hub or switch, phoneline networks link together like a string of Christmas lights. In a HomeLink network, data passes into on one side of a port, and a new telephone cable continues out from the port's other side. You can string up to 30 PCs on a single HomeLink network, provided that the entire length of cable does not exceed 300 meters (1000 feet).

HomeLink networks can send data through existing telephone lines without disrupting your telephone service, connecting over your existing telephone jacks. If you have PCs on two different floors of your house, plug one of the downstairs PCs into the phone jack in the wall, and you're able to network your PCs upstairs without running excessive amounts of extra cable.
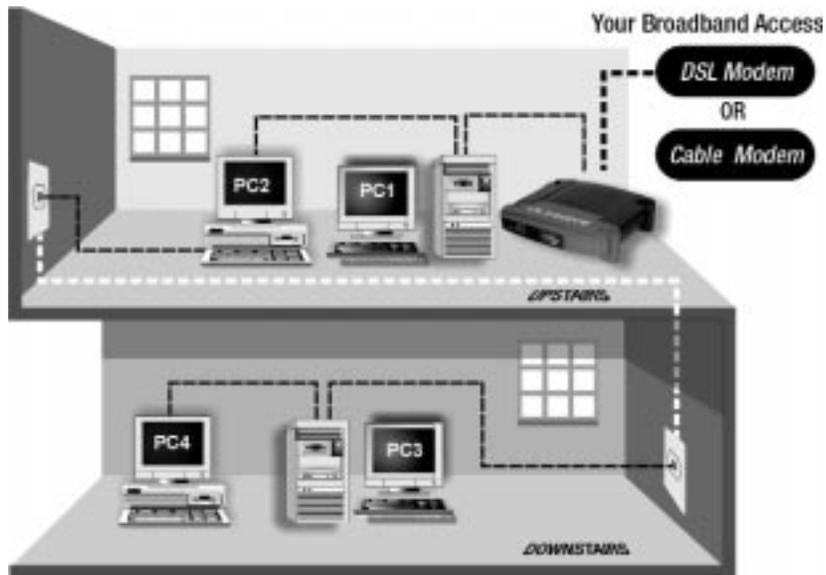
Resetting the HomeLink Phoneline Router

If your network connections begins acting erratically, you may want to reset the Homelink Phoneline Router.

To reset your Homelink Phoneline Router, do the following:

1. Shut down all of your network components.

2. Disconnect the Homelink Phoneline Router's power supply and wait five seconds.

3. Plug the Homelink Phoneline Router's power supply back into the power outlet.

Configuring Your Ethernet Network with the HomeLink Phoneline 10M Cable/DSL Router

Configuring the HomeLink Phoneline Router

Now that your HomeLink Phoneline Router is wired into your network, you can begin configuring your system.

1. **Open your web browser** and type `http://192.168.1.1` in the browser's Address box. This number is the default IP address of the HomeLink Phoneline Router. Press the **Enter** key.

> **Note:** *If the TCP/IP protocol is not configured on your PC, go to the Appendix for TCP/IP installation instructions now.*

2. **A username and password prompt** will appear. Leave the User Name box empty and type `admin` (the default password) in the **Password** box. Click the **OK** button.
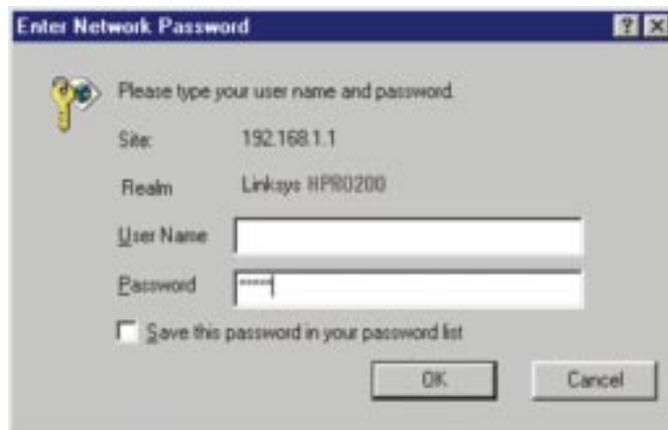
> **Note:** *If you have previously enabled an Internet Sharing Proxy Service on any of your PCs, you must disable it now.*
>
> • *If you are running Netscape Navigator: Click **Edit** >> **Preference** >> **Advanced** >> **Proxies**> and click **Direct Connection to the Internet**.*
> • *If you are running Internet Explorer v5 or better, click **Start**>> **Settings**>> **Control Panel**>> **Internet Options**>> **Connections**>> **LAN Settings**. Remove the checks from all three boxes. Click **OK** to continue.*

3. **The HomeLink Phoneline 10M Cable/DSL Router's Setup page** will appear.

4. **Configure the following values**.

   Router Name & Domain Name These fields allow you to supply a host and domain name for the HomeLink Phoneline Router. Some ISPs require these names as identification. You may have to check with your ISP to see if your Broadband Internet service has been configured with a host and domain name. In most cases, leaving these fields blank will work.

LAN IP Address These values refer to your internal network settings. Unless you have specific internal needs, there should be no reason to change these values. For the internal LAN, the default values are as follows.
• Private IP Address: 192.168.1.1
• Subnet Mask: 255.255.255.0

> **Note:** *If you have an existing DHCP server on your LAN and you don't wish to use the HomeLink Phoneline Router as your new DHCP server, you must assign Router a static IP address. The Router's IP address must be compatible with your existing network. You can not have two DHCP servers running on one LAN at the same time.*

WAN IP Address These values refer to the outside network you connect to every time you access your Broadband Internet connection. Most Broadband ISPs assign their clients with a different IP address each time they log on. If this is the case with your ISP, click **Obtain an IP Address Automatically** and continue to step 5. If your ISP assigns you a fixed IP address, click **Specify an IP Address** and enter the address into the **Subnet Mask, Default Gateway Address** and **DNS** fields provided by the ISP.

> ⚠️ If you need to enable PPPoE support, choose **Enable**. If you do enable PPPoE, remember to remove any existing PPPoE applications already on your computer. (More information on *PPPoE* can be found in the **Setup** section for the Web-based Utility.)

5. **When you have properly configured** the *Setup* page, click the **Apply** button, then click the **Continue** button.

6. **Choose the DHCP tab**.

7. **Unless you already have a DHCP server** on your internal network, choose **Enable** from the *DHCP Server* field. By choosing Enable, you will configure the HomeLink Phoneline Router to automatically assign IP addresses to each of your PCs. In the *Number of DHCP Users* box, enter the number of PCs you plan on networking to the HomeLink Phoneline Router, or leave it alone. Don't forget to change this number if, in the future, you add more PCs to your network.

8. Click the **Apply** button, then click the **Continue** button.

9. **Reset the power on the cable or DSL modem**, then restart the computer so the computer can obtain the new HomeLink Phoneline Router's IP information.

Your HomeLink Phoneline Router is now configured to your network. Please continue to the following section to complete your network setup.

Configuring Your Windows 95 & 98 PCs to Connect to the HomeLink Phoneline Router

Now that the HomeLink Phoneline Router is configured, you will have to configure your other PCs to accept the IP addresses that the HomeLink Phoneline Router will provide.

> ⚠️ These instructions apply only to Windows 95, 98, and ME machines. For TCP/IP setup under Windows NT and 2000, please refer to your Windows manual.

1. Click the **Start** button, select **Settings**, then click on **Control Panel**.

2. Double-click the **Network** icon.

3. In the **Configuration** window, select the **TCP/IP** protocol line that has been associated with your network card/adapter. If there is no TCP/IP line listed, refer to the Appendix to install the TCP/IP Protocol **now**.

4. Click the **Properties** button, then choose the **IP Address** tab. Select **Obtain an IP address automatically**. Press the **OK** button. You have completed the client settings.

5. Click the **OK** button. Windows may ask for original Windows installation files. Supply them as needed (i.e.: D:\win98, D:\win95, c:\windows\options\cabs., etc.)

6. Windows will ask you to restart the PC. Click the **Yes** button.

Repeat steps 1-6 for each PC on your network. When all of your PCs are configured, the HomeLink Phoneline Router Setup and Installation is complete.

If you would like, you may continue on to learn more about the HomeLink Phoneline Router's Web-based Utility.

The HomeLink Phoneline 10M Cable/DSL Router's Web-based Utility

Quick & Easy Administration

The HomeLink Phoneline 10M Cable/DSL Router has an internal integrated-circuit chip but no keyboard, monitor or mouse capabilities. Because of these limitations, an administrative utility has been programmed into that chip. All router-based administrative tasks are performed through this utility. The utility can be accessed by any PC on the network by typing `http://192.168.1.1` into the PC's web browser address window.
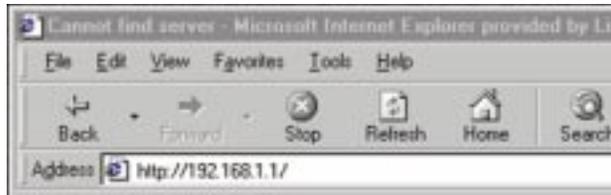
Upon entering the address into the web browser, a password request page will pop up.

Leave the User Name field empty, but type "**admin**" into the Password field.

Setup

On the following pages you will find brief descriptions of each utility web-page and each page's more important functions. More detailed explanations and instructions can be found by clicking each page's **Help** button. To apply any settings you've altered on any page, click the **Apply** button, then click **Continue**. To clear any values you've entered on any page, click **Cancel**.

The Basic Setup screen is the first screen you will see when you access the Utility. If you have already installed and setup the Router, you have already seen this screen and have already properly configured all of the screen's values.

• **Router Name** This entry is necessary for some ISPs.

• **Domain Name** This entry is necessary for some ISPs.

• **Firmware Version** This entry shows the version of the firmware you are using. Future versions of the HomeLink Phoneline Router's Firmware may become available on the Linksys website.

- **LAN IP Address and Subnet Mask** The IP Address and Subnet Mask of the HomeLink Phoneline Router as it is seen on the internal LAN. The default value is 192.168.1.1 for IP and 255.255.255.0 for Subnet Mask.

- **WAN IP Address and Subnet Mask** The IP Address and Subnet Mask of the HomeLink Phoneline Router as seen by external users on the Internet (including your ISP). If set to Obtain an IP address automatically, these values are assigned by your ISP.

- **Default Gateway Address** Your ISP will provide you with the Gateway IP Address. If set to Obtain an IP address automatically, these values are assigned by your ISP.

- **DNS (Domain Name Server) IP Address** Your ISP will provide you with at least one DNS IP Address. If set to Obtain an IP address automatically, these values are assigned by your ISP.

You can test and see if the above settings are correct by successfully connecting to the Internet.

- **PPPoE (Point-to-Point Protocol over Ethernet)** Some DSL-based ISPs use PPPoE to establish communications with an end-user. If you are connected to the Internet through a DSL line, check with your ISP to see if they use PPPoE. If they do, you will have Enable it. To enable PPPoE:

  1. Choose the **Enable** option within the PPPoE area of the *Setup* screen.

  2. Enter the **User Name** you use to log onto your Internet connection.

  3. Enter your corresponding **Password**.

- **Connect on Demand** If you aren't actively using the Internet, you can configure the HomeLink Phoneline Router to cut your connection with your ISP after a certain period of time. If you have been disconnected due to inactivity, *Connect on Demand* enables the HomeLink Phoneline Router to automatically re-establish your connection as soon as you attempt to access the Internet again. If you wish to activate *Connect on Demand*, choose the **Enable** option.

- **Max Idle Time** The Max Idle Time is the amount of time you would like to pass before the HomeLink Phoneline Router drops your Internet connection due to inactivity. If you want your Internet connection to remain on at all times, enter zero in this field.

Password
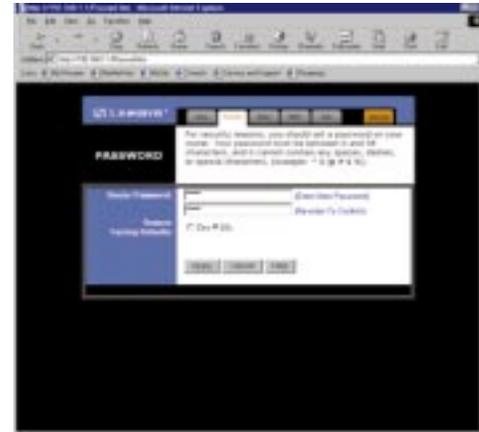
It is strongly recommended that you set a password for the HomeLink Phoneline Router. When you first power up the HomeLink Phoneline Router, you will notice that the Password setting has been left blank. When the password field is blank, all users on your network can access the HomeLink Phoneline Router simply by entering the unit's IP address into their web browser's location window.

If you set the Restore Factory Default option and click Apply, you will clear all of the HomeLink Phoneline Router's settings. Do not restore to the factory defaults unless you are having difficulties with the HomeLink Phoneline Router. Once the HomeLink Phoneline Router is reset, you will have to re-enter your configuration information.

Status
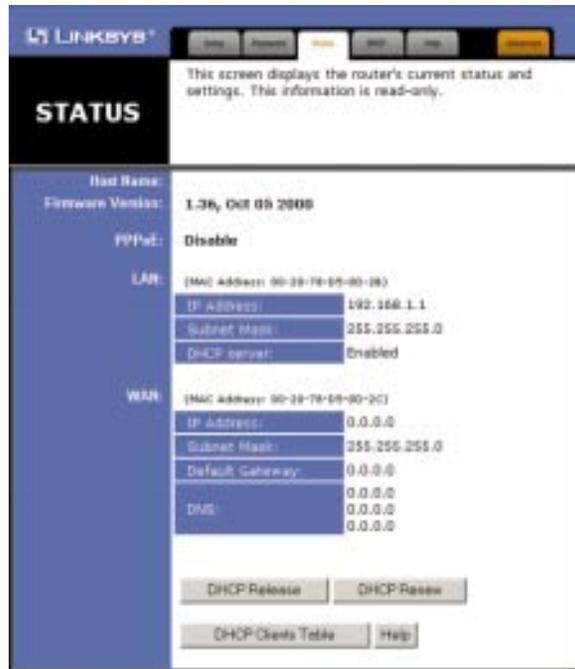
This screen provides the current status of the device. All of the information provided is read-only.

- **Router Name** This field shows the name of this device. This entry is necessary for some ISPs.

- **Firmware Version** This field shows the installed version of the firmware.

- **PPPoE (Point-to-Point Protocol over Ethernet)** This field shows whether or not you have enabled the use of the HomeLink Phoneline Router's PPPoE support. Click the Connect button if your PPPoE status is Disconnected. This will initiate a connection to your ISP. Click Disconnect if you want to cut your connection to your ISP.

- **LAN** These fields display the HomeLink Phoneline Router's current IP Address and Subnet Mask, as seen by users on your internal network.

- **DHCP Server** This field shows the status of the HomeLink Phoneline Router's DHCP server function. This option is either enabled or disabled.

- **WAN** These fields display the HomeLink Phoneline Router's IP Address, Subnet Mask and Gateway IP, as seen by external users on the Internet.

- **DNS (Domain Name Server) IP Address** This field shows the IP Address of the DNS currently being used. Multiple DNS IP settings are common. The first available DNS entry is used in most cases.

DHCP
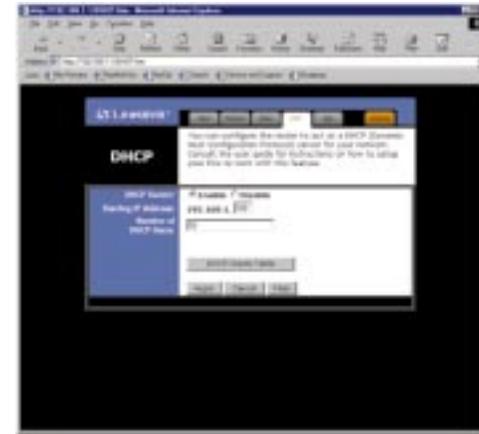
A DHCP (Dynamic Host Configuration Protocol) Server automatically assigns IP addresses to each computer on your network. Unless you already have one, it is highly recommended that the HomeLink Phoneline Router be set up as a DHCP server.

- **DHCP Server** Check the **Enable** option to enable the DHCP server option of the HomeLink Phoneline Router. If you already have a DHCP server on your network, set the HomeLink Phoneline Router's DHCP option to **Disable**.

- **Starting IP Address** Enter a numerical value for the DHCP server to start with when issuing IP addresses.

- **Number of DHCP users** Enter the maximum number of PC that you want the DHCP server to assign IP addresses to, with the absolute maximum being 253.

• **DHCP Client Table** Click on the **Client Table** button to show the current DHCP Client information. (This information is stored in temporary memory, so the list of clients could disappear.)

Help

Here you will find links to all of the Utility's internal support documentation, as well as the application that upgrades the HomeLink Phoneline Router's firmware. To upgrade the Homelink Phoneline Router's firmware:

1. Downloaded the latest firmware version from the Linksys website (www.linksys.com).

2. Go to the *Help* screen (above).

3. Click **Upgrade Firmware**. A new page will appear (below).
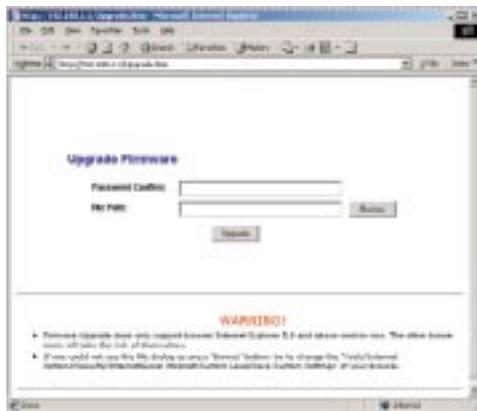
4. Enter the HomeLink Phoneline Router's administration password into the *Password Confirm* box.

5. Click the **Browse** button and find the firmware upgrade file that you downloaded from the Linksys website. Double-click the **upgrade file**.

6. Click the **Upgrade** button and follow the instructions there.

Filters
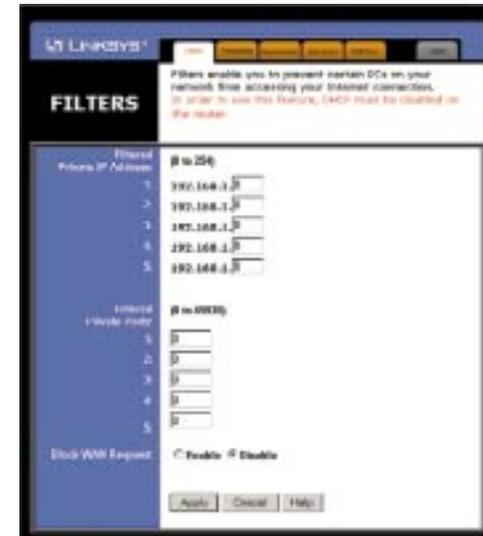
Filters block specific internal users from accessing the Internet. You can set up a filter through an IP address or a network Port number.

To Modify Filter Settings

• Enter the IP addresses you wish to filter into the IP address fields. The users who have these IP addresses will not be able to access the Internet.

• You can also filter users by entering their network port number. Enter the port numbers you want to filter into the port numbers fields. Users who are connected to the HomeLink Phoneline Router will no longer be able to access any port number listed there.

Block WAN Request

• By enabling the *Block WAN Request* feature, you can prevent your network from being pinged, or detected, by other Internet users. The *Block WAN Request* feature also adds another measure of security to your network by hiding your network ports. Both functions of the *Block WAN Request* feature make it more difficult for outside users to work their way into your network.

Click the **Apply** button to save any changes.

Forwarding
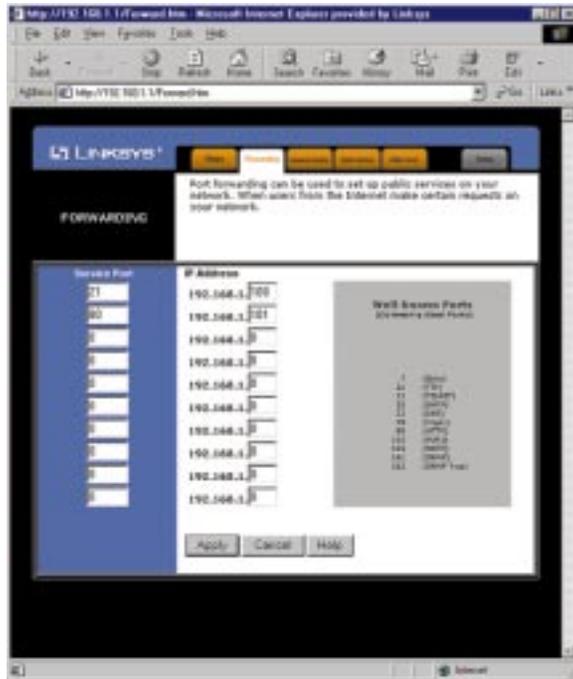
Port forwarding sets up public services on your network. When users from the Internet make certain requests of your network, the HomeLink Phoneline Router will forward those requests to the appropriate computer. The HomeLink Phoneline Router's DHCP function must be disabled to use Forwarding.

Forwarding is generally used to set up a webserver, ftp server, or e-mail server on your network. To add a server using Forwarding:

1. Enter the port number used by the server. On the same line, enter the IP Address of the server that you want the Internet users to be able to access.

2. Configure as many entries as you would like until all of the link entries are filled.

3. Click the Apply to save the settings.

Dynamic Routing

With Dynamic Routing you can automatically adjust to physical changes in the network's layout. The HomeLink Phoneline Router, using the RIP protocol, determines the network packets' route based on the fewest number of hops between the source and the destination. The RIP protocol regularly broadcasts routing information to other routers on the network.

To set up Dynamic Routing:

1. Choose the correct working mode. **Gateway Mode** should be used if your HomeLink Phoneline Router is hosting your network's connection to the Internet. **Router Mode** should be selected if the HomeLink Phoneline Router exists on a network with other routers.

2. Choose the **protocol** by which you transmit data on the network.

3. Choose the protocol by which the HomeLink Phoneline Router receives network data.

4. Click the Apply button to save your changes.

Static Routing

If your HomeLink Phoneline Router is connected to more than one network, it may be necessary to set up a static route between them. A static route is a pre-determined pathway that network information must travel to reach a specific host or network. Click the **Show Routing Table** button to view the current static routing configuration.

To create a static route entry:

1. Select **Static Route Entry** from the drop down list. The HomeLink Phoneline Router supports up to 20 static route entries.

2. Enter the following data to create a new static route:

    Destination LAN IP The Destination LAN IP is the Address of the remote network or host to which you want to assign a static route. Enter the IP address of the host for which you wish to create a static route here. If you are building a route to an entire network, be sure that the network portion of the IP address is set to zero. For example, the HomeLink Phoneline Router's standard IP address is 192.168.1.1. Based on this address, the address of the network to which the HomeLink Phoneline Router is connected is 192.168.1, with the last digit (1, in this case) determining the HomeLink Phoneline Router's place on the network. Therefore you would enter the IP address 192.168.1.0 if you wanted to route to the HomeLink Phoneline Router's entire network, rather than just to the HomeLink Phoneline Router.

    Network Mask The Network Mask (also known as the Subnet Mask) determines which portion of an IP address is the network portion, and which portion is the host portion. In the example above the Network Mask is 255.255.255.0. This determines (by using the values 255) that the first three numbers of an network IP address identify this particular network, while the last digit (from 1 to 254) would identify the specific host.

    Gateway IP This IP address should be the IP address of the gateway device that allows for contact between the HomeLink Phoneline Router and the remote network or host.

3. Click the **Apply** button to save your changes.

DMZ Host

The DMZ Host setting allows one local user to be exposed to the Internet to use a special-purpose service such as Internet gaming or Video-conferencing.

To expose one computer, enter the computer's IP address and click the **Apply** button. Deactivate DMZ by entering a zero.

Troubleshooting

Common Problems and Solutions

This section provides possible solutions to problems regarding the installation and operation of the HomeLink Phoneline Router. Read below description to solve your problems. If you can't find an answer here, check the Linksys website at www.linksys.com.

1. I Can't connect to the HomeLink Phoneline Router.
   • The HomeLink Phoneline Router is properly installed, all connections are OK, and it is powered ON.
   • Make sure that your PC and the HomeLink Phoneline Router are on the same network segment. If you are not sure, initiate the DHCP function, let the PC get the IP address automatically.
   • Make sure that your PC is using an IP Address within the default range of 192.168.1.2 to 192.168.1.254 and thus compatible with the HomeLink Phoneline Router default IP Address of 192.168.1.1
   • Also, the Subnet Mask should be set to 255.255.255.0 to match the HomeLink Phoneline Router. In the HomeLink Phoneline Router, you can check these settings by using Control Panel-Network to check the Properties for the TCP/IP protocol.

2. The Diag LED stays lit when it shouldn't.
   • The Diag LED lights up when the device is first powered up. Meantime, the system will boot up itself and check for proper operation. After finishing the checking procedure, the LED turns off to show the system is working fine. If the LED remains lit after this time, the device is not working properly. Try to re-flash the firmware by assigning a static IP address to the computer, then upgrade the firmware again. If that doesn't help, contact your dealer for further inspection.

3. I can't browse through the HomeLink Phoneline Router.
   • Check if both ends of the network cable and power adapter are properly connected. Check if the status LEDs on the front panel are functioning properly.

- If using Windows 95, 98, or ME, check the TCP/IP setup on the client side. Run "**winipcfg**" by clicking on the **Start** button, selecting **Run**, typing "winipcfg" into the empty field and pressing the **Enter** key. The PC should have an IP address of 192.168.1.xxx ("xxx" is from 2 to 254.) Subnet Mask is 255.255.255.0, the default gateway IP should be the Router's IP Address, and DNS. If using Windows NT or 2000, use IPCONFIG to obtain this information.
- Same as above, check the same setup values in the Status Monitor page of the HomeLink Phoneline Router.

4. When I enter a URL or IP address, I get a time out error.
- Check if other PCs work. If they do, make sure that your workstations IP settings are correct (IP address, Subnet Mask, Default gateway and DNS)
- If the PCs are configured correctly, but still not working, check the HomeLink Phoneline Router. Make sure that it is connected and ON. Connect to it and check its settings. (If you cannot connect to it, check the LAN and power connections.)
- If the HomeLink Phoneline Router is configured correctly, check your Internet connection. (DSL/Cable modem etc.) to see that it is working correctly.

5. I can't obtain an IP address from my cable or DSL modem.
- Make sure that all of your cabling is properly connected and that all of the Router's LEDs are correctly illuminated.
- Power down your cable or DSL modem for a few seconds. Turn it back on. After the modem goes through its self-test, check to see if you now have an IP address.
- Make sure that your cable or DSL modem is DHCP-capable.
- You may have to enter the router or host name in the Setup page of the HomeLink Phoneline Router's web-based utility.
- Your ISP may require Mac Addresses. Check with your ISP. This address can be obtained in the Status screen of the Router's Web-based Utility.

6. I can't get a link for one of my ports.
- Make sure that your cabling is not damaged and that it is connected properly.
- Make sure that the network card you are connecting to has been properly installed.
- Make sure that both the HomeLink Phoneline Router and the device are powered on.
- If you are linking to a hub or a switch, make sure that the hub or switch is functioning correctly.

- If you are connecting to a cable modem, try plugging the cable modem into the HomeLink Phoneline Router's uplink port rather than a 10BaseT port.
- If all else fails, reset the HomeLink Phoneline Router.

Frequently Asked Questions

What is the maximum number of IP addresses that the HomeLink Phoneline Router will support? The Router will support to 253 IP addresses.

Is IPSec Pass-Thru supported by both the HomeLink Phoneline Router? Yes, it is a built-in feature that the Router automatically enables.

Where is the HomeLink Phoneline Router installed on the network? In a typical environment, the Router is installed between the Cable/DSL Modem and the LAN. Plug the HomeLink Phoneline Router into the Cable/DSL Modem's Ethernet port.

Does the HomeLink Phoneline Router support IPX or AppleTalk? No. TCP/IP is the only protocol standard for the Internet and has become the global standard for communications. IPX, a NetWare communications protocol used only to route messages from one node to another, and AppleTalk, a communications protocol used on Apple and Macintosh networks, can be used from LAN to LAN connections, but those protocols cannot connect from WAN to LAN.

Does the WAN connection of the HomeLink Phoneline Router support 100Mb Ethernet? Because of the speed limitations of broadband Internet connections, the Router's current hardware design supports 10Mb Ethernet on its WAN port. It does, of course, support 100Mbps on the LAN side of the Router.

What is **Network Address Translation** and what is it used for? Network Address Translation (NAT) translates multiple IP addresses on the private LAN to one public address that is sent out to the Internet. This adds a level of security since the address of a PC connected to the private LAN is never transmitted on the Internet. Furthermore, NAT allows the HomeLink Phoneline Router to be used with low cost Internet accounts, such as DSL or cable modems, where only one TCP/IP address is provided by the ISP. The user may have many private addresses behind this single address provided by the ISP.

Does the HomeLink Phoneline Router support any operating system other than Windows 95, 98, Millennium, NT, or 2000? Yes, but Linksys does not, at this time, provide technical support for setup, configuration or troubleshooting of any non-Windows operating systems.

Does the HomeLink Phoneline Router support ICQ send file? Yes, with the following fix: ICQ menu-> preference -> connections tab-> check "I am behind a firewall or proxy", and set the firewall time-out to 80 seconds in firewall setting. The Internet user can then send a file to a user behind the Router.

How do I get Napster to work with the HomeLink Phoneline Router? Napster is fully compatible with the Router and requires no special settings.

I setup an Unreal Tournament Server, but others on the LAN cannot join. What do I need to do? If you have a dedicated Unreal Tournament server running, you need to create a static IP for each of the LAN computers and forward ports 7777, 7778, 7779, 7780, 7781, and 27900 to the IP address of the server. If you want to use the UT Server Admin, forward another port (8080 usually works well), then in the [UWeb.WebServer] section of the server.ini file, set the ListenPort to 8080 (to match the mapped port above) and ServerName to the IP assigned to the Router from your ISP.

Can multiple gamers on the LAN get on one game server and play simultaneously with just one public IP address? It depends on the which network game or what kind of game server you are using. For example, Unreal Tournament supports multi-login with one public IP.

How do I get *Half-Life: Team Fortress* to Work with the HomeLink Phoneline Router? The default client port for Half-Life is 27005. The computers on your LAN need to have "+clientport 2700x" to the HL shortcut command line; the x would be 6, 7, 8, and on up. This lets multiple computers connect to the same server. *One problem:* version 1.0.1.6 won't let multiple computers with the same CD key connect at the same time, even if on the same LAN (not a problem with 1.0.1.3). As far as hosting games, the HL server does not need to be in the DMZ. Just forward port 27015 to the local IP of the server computer. There remains, however, a problem with people being booted after a few minutes with an "illegible server message."

How can I not receive corrupted FTP downloads? If you are experiencing corrupted files when you download a file with your FTP client, try using another FTP program.

Web page hangs, corrupt downloads, or nothing but junk characters are being displayed on the screen. What do I need to do? Force your NIC to 10Mbps or half-duplex mode, and turn off the "Autonegotiate" feature of your NIC as a temporary measure. (Please look at the Network Control Panel, in your Ethernet Adapter's Advanced Properties tab.). Check our website at www.linksys.com for more information.

If all else fails in the installation, what can I do? Reset the HomeLink Phoneline Router by holding down the reset button for at least three seconds and reset your cable or DSL modem by powering the unit off and then on. Obtain and flash the latest firmware release that is readily available on Linksys website, www.linksys.com.

How will I be notified of new router firmware upgrades? All Linksys firmware upgrades are posted on the Linksys website at www.linksys.com, where they can downloaded for free. The HomeLink Phoneline Router's firmware can be upgraded with TFTP programs.

Does the HomeLink Phoneline Router support IPSec? No, not currently. An IPSec pass-thru solution is being developed by Linksys.

Will the HomeLink Phoneline Router function in a Macintosh environment? Yes, but the Router's setup pages are accessible only through Internet Explorer v4.0 or Netscape Navigator v4.0 or higher for Macintosh.

With which type of firewall is the HomeLink Phoneline Router equipped? The HomeLink Phoneline Router uses NAT and TCP/IP port inspections.

Does the HomeLink Phoneline Router do Stateful packet inspection? No

I am not able to get the web configuration screen for the HomeLink Phoneline Router. What can I do? You may have to remove the proxy settings on your Internet browser, e.g., Netscape Navigator or Internet Explorer. Or remove the dial-up settings on your browser. Check with your browser documentation.

What is DMZ? Demilitarized Zone (DMZ) allows one IP Address (computer) to be exposed to the Internet. Some applications require multiple TCP/IP ports to be open. It is recommended that you set your computer with a static IP if you want to use DMZ.

If DMZ is used, does the exposed user share the public IP with the HomeLink Phoneline Router? No.

Does the HomeLink Phoneline Router pass PPTP packets or actively route PPTP sessions? The Router allows PPTP packets to pass through.

What is the maximum number of users supported by the HomeLink Phoneline Router? The Router supports up to 253 users.

Is the HomeLink Phoneline Router cross-platform compatible? Any platform that supports Ethernet and TCP/IP is compatible with the Router.

Will the HomeLink Phoneline Router allow me to use my own public IPs and Domain, or do I have to use the IPs provided by the Router? The Router mode allows for customization of your public IPs and Domain.

How many ports can be simultaneously forwarded? Theoretically, the Router can establish 520 sessions at the same time, but you can only forward 10 ports.

Does the HomeLink Phoneline Router replace a modem? Is there a cable or DSL modem in the Router? No, this version of the Router must work in conjunction with a cable or DSL modem.

Which modems are compatible with the HomeLink Phoneline Router? The Router is compatible with virtually any cable or DSL modem that supports Ethernet.

What are the advanced features of the HomeLink Phoneline Router? The Router's advanced features include Filters, Forwarding, Dynamic Routing, Static Routing, and DMZ host.

What is the maximum number of VPN sessions allowed by the HomeLink Phoneline Router? At least one session.

Does Linksys provided syslog support? No, Linksys does not currently provide syslog support.

How can I check whether I have static DHCP IP Addresses? Consult your ISP to confirm the information.

How do I get mIRC to work with the HomeLink Phoneline Router? Set port forwarding to 113 for the computer on which you are using mIRC.

Appendix

How to Ping Your ISP's E-mail & Web Addresses

Virtually all Internet addresses are configured with words or characters (i.e., www.linksys.com, www.yahoo.com, etc.) In actuality, however, these Internet addresses are assigned to IP addresses, which are the true addresses on the Internet.

IP and web addresses, however, can sometimes be long and hard to remember. Because of this, certain ISPs will shorten their server addresses to single words or codes on their users' web browser or e-mail configurations. If your ISP's E-mail and Web server addresses are configured with single words ("www", "e-mail", "home", "pop3", etc.) rather than whole Internet Addresses or IP Addresses, the HomeLink Phoneline Router may have problems sending or receiving mail and accessing the Internet. This happens because the HomeLink Phoneline Router has not been configured by your ISP to accept their abbreviated server addresses.

The solution is to determine the true web addresses behind your ISPs code words. You can determine the IP and web addresses of your ISP's servers by "pinging" them.

> **If you don't have your ISP's web and e-mail IP Addresses, you *must* either get them from your ISP or follow these steps *prior* to connecting your HomeLink Phoneline Router to your network.**

Step One: Pinging an IP Address

The first step to determining your ISP's web and e-mail server address is to ping its IP Address.

1. **Power on the computer and the cable or DSL modem**, and restore the network configuration set by your ISP if you have since changed it.

2. **Click Start**, then **Run,** and type "command". This will bring up the DOS Window.

3. **At the DOS command prompt**, type "ping mail" (assuming that the location for which you're trying to find an IP address is configured as "mail"). Press **Enter**. Information such as the following data, taken from a ping of Microsoft Network's e-mail server, will be displayed.

```
C:\>ping mail

Pinging mail [24.53.32.4] with 32 bytes of data:

Reply from 24.53.32.4: bytes=32 time<10ms TTL=128
Reply from 24.53.32.4: bytes=32 time<10ms TTL=128
Reply from 24.53.32.4: bytes=32 time<10ms TTL=128
Reply from 24.53.32.4: bytes=32 time<10ms TTL=128

Ping statistics for 24.53.32.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0%
  loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum =  0ms, Average =  0ms
```

4. **Write down the IP address returned by the ping command**. (In the example above: 24.53.32.4.) This IP address is the actual IP address of the server "mail", or any other word or value you have pinged.

Step Two: Pinging for a Web Address

While the IP address returned above would work as your e-mail server address, it may not be permanent. IP Addresses change all the time. Web addresses, however, usually don't. Because of this, you're likely to have less problems by configuring your system with web addresses rather than IP addresses. Follow the instructions below to find the web address assigned to the IP address you just pinged.

1. **At the DOS command prompt**, type "ping -a 24.53.32.4", where 24.53.32.4 is the IP address you just pinged. Information such as the following data will be displayed.

```
C:\>ping -a 24.53.32.4

Pinging mail.msnv3.occa.home.com [24.53.32.4] with 32
  bytes of data:

Reply from 24.53.32.4: bytes=32 time<10ms TTL=127
Reply from 24.53.32.4: bytes=32 time<10ms TTL=127
Reply from 24.53.32.4: bytes=32 time<10ms TTL=127
Reply from 24.53.32.4: bytes=32 time<10ms TTL=127

Ping statistics for 24.53.32.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0%
  loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum =  0ms, Average =  0ms
```

2. **Write down the web address returned by the ping command**. (In the example above: mail.msnv3.occa.home.com.) This web address is the web address assigned to the IP address you just pinged. While the IP address of "mail" could conceivably change, it is likely that this web address will not.

3. **Replace your ISP's abbreviated server address** with this extended web address in the corresponding Internet application (web browser, e-mail application, etc.).

Once you have replaced the brief server address with the true server address, the HomeLink Phoneline Router should have no problem accessing the Internet through that Internet application.

Installing the TCP/IP Protocol

Follow these instructions to install the TCP/IP Protocol on one of your PCs *only* after a network card has been successfully installed inside the PC. These instructions are for Windows 95, 98, and ME. For TCP/IP setup under Windows NT, please refer to your Windows NT manual.

1. Click the **Start** button. Choose **Settings**, then **Control Panel**.

2. Double-click the **Network** icon. Your Network window should pop up. Select the **Configuration** tab.

7. After a few seconds you will be brought back to the main Network window. The TCP/IP Protocol should now be listed.

3. Click the **Add** button**.**

4. Double-click **Protocol**.

5. Highlight **Microsoft** under the list of manufactures.

6. Find and double-click **TCP/IP** in the list to the right**.**
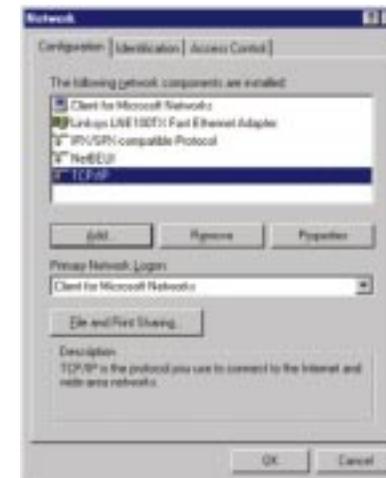
8. Click **OK**. Windows may ask for original Windows installation files. Supply them as needed (i.e.: D:\win98, D:\win95, c:\windows\options\cabs.)

9. Windows will ask you to restart the PC. Click **Yes**.

The TCP/IP Installation is complete.

Twisted-Pair Cabling

There are different grades, or categories, of twisted-pair cabling. Category 5 is the most reliable and is highly recommended. Category 3 is a good second choice. Straight-through cables are used for connecting computers to a hub. Crossover cables are used for connecting a hub to another hub (there is an exception: some hubs have a built-in uplink port that is crossed internally, which allows you to link or connect hubs together with a straight-through cable instead).

RJ-45 Color Chart

Wire 1	White with an Orange Stripe
Wire 2	Orange
Wire 3	White with a Green Stripe
Wire 4	Blue
Wire 5	White with a Blue Stripe
Wire 6	Green
Wire 7	White with a Brown Stripe
Wire 8	Brown

You can buy pre-made Category 5 cabling, or cut and crimp your own. Category 5 cables can be purchased or crimped as either straight-through or crossover. Inside a Category 5 cable are 8 thin, color-coded wires inside that run from one end of the cable to the other. All 8 wires are used. In a straight-through cable, wires 1, 2, 3, and 6 at one end of the cable are also wires 1, 2, 3, and 6 at the other end. In a crossover cable, the order of the wires changes from one end to the other: wire 1 becomes 3, and 2 becomes 6. See the diagrams on the next page for more detailed information on straight-through and crossover cabling.

straight-through cable		crossed cable	
Wire	Becomes	Wire	Becomes
1	1	1	3
2	2	2	6
3	3	3	1
6	6	6	2

To determine which wire is wire number 1, hold the cable so that the end of the plastic RJ-45 tip (the part that goes into a wall jack first) is facing away from you. Face the clip down so that the copper side faces up (the springy clip will now be parallel to the floor).When looking down on the copper side, wire 1 will be on the far left.

Pin 1　　spring clip on bottom
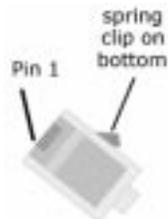
Crimping Your Own Network Cables

• Straight-Through Cabling

Pins 4, 5, 7 and 8 are not used
Receive (3 & 6)
Transmit (1 & 2)
Transmit (1 & 2)
Receive (3 & 6)
Pins 4, 5, 7 and 8 are not used

Straight-Through

Pin number — Wire Color	Wire	Becomes	Pin number — Wire Color
Pin 1 ==> Orange/White	1	1	Pin 1 ==> Orange/White
Pin 2 ==> Orange			Pin 2 ==> Orange
Pin 3 ==> Green/White			Pin 3 ==> Green/White
Pin 4 ==> Blue	2	2	Pin 4 ==> Blue
Pin 5 ==> Blue/White			Pin 5 ==> Blue/White
Pin 6 ==> Green	3	3	Pin 6 ==> Green
Pin 7 ==> Brown/White			Pin 7 ==> Brown/White
Pin 8 ==> Brown	6	6	Pin 8 ==> Brown

•Cross-Over Cabling

Pins 4, 5, 7 and 8 are not used
Receive (3 & 6)
Transmit (1 & 2)
Receive (3 & 6)
Transmit (1 & 2)
Pins 4, 5, 7 and 8 are not used

Crossed-Over

Pin number — Wire Color	Wire	Becomes	Pin number — Wire Color
Pin 1 ==> Orange/White	1	3	Pin 1 ==> Green/White
Pin 2 ==> Orange			Pin 2 ==> Green
Pin 3 ==> Green/White			Pin 3 ==> Orange/White
Pin 4 ==> Blue	2	6	Pin 4 ==> Blue
Pin 5 ==> Blue/White			Pin 5 ==> Blue/White
Pin 6 ==> Green	3	1	Pin 6 ==> Orange
Pin 7 ==> Brown/White			Pin 7 ==> Brown/White
Pin 8 ==> Brown	6	2	Pin 8 ==> Brown

Glossary

Daisy Chain - Connected in series, one after the other. Transmitted signals go to the first device, then to the second and so on.

DHCP (Dynamic Host Configuration Protocol) - A protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Using the Internet's set of protocol (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. It's especially useful in education and other environments where users change frequently. Using very short leases, DHCP can dynamically reconfigure networks in which there are more computers than there are available IP addresses.

DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

DMZ - A DMZ (demilitarized zone) is a computer host or small network inserted as a "neutral zone" between a company's private network and the outside public network. It prevents outside users from getting direct access to a server that has company data.

DNS - The domain name system (DNS) is the way that Internet domain name are located and translated into Internet Protocol (IP) addresses. A domain name is a meaningful and easy-to-remember "handle" for an Internet address.

Dynamic IP Address - An IP address that is automatically assigned to a client station in a TCP/IP network, typically by a DHCP server. Network devices that serve multiple users, such as servers and printers, are usually assigned static IP addresses.

Dynamic Routing - The ability for a router to forward data via a different route based on the current conditions of the communications circuits. For example, it can adjust for overloaded traffic or failing lines and is much more flexible than static routing, which uses a fixed forwarding path.

Firewall - A firewall is a set of related programs, located at a network gateway server, that protects the resources of a network from users from other networks. (The term also implies the security policy that is used with the programs.) An enterprise with an intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources and for controlling what outside resources to which its own users have access.

Basically, a firewall, working closely with a router, examines each network packet to determine whether to forward it toward its destination.

Firmware - Programming that is inserted into programmable read-only memory (programmable read-only memory), thus becoming a permanent part of a computing device.

HPNA (Home Phoneline Networking Alliance) - An industry standard for interconnecting computers within a home using existing telephone lines. Using HPNA (also known as HomePNA), multiple computer users in a home can share a single Internet connection, open or copy files from different computers, share printers, and play multiuser computer games. The latest version, HPNA 2.0, allows data transmission at a rate of 10 Mbps over a home's standard telephone line wiring system using the Ethernet CSMA/CD framing and transmission protocol. HPNA can be used without interrupting normal voice or fax services. One user can talk on the phone at the same time other users are sharing the same line to access the Web or share other computer resources.

IP Address - In the most widely installed level of the Internet Protocol (Internet Protocol) today, an IP address is a 32-binary digit number that identifies each sender or receiver of information that is sent in packet across the Internet. When you request an HTML page or send e-mail, the Internet Protocol part of TCP/IP includes your IP address in the message (actually, in each of the packets if more than one is required) and sends it to the IP address that is obtained by looking up the domain name in the Uniform Resource Locator you requested or in the e-mail address you're sending a note to. At the other end, the recipient can see the IP address of the Web page requestor or the e-mail sender and can respond by sending another message using the IP address it received.

IPCONFIG - A utility that provides for querying, defining and managing IP addresses within a network. A commonly used utility for configuring networks with static IP addresses.

IPSec - IPSec (Internet Protocol Security) is a developing standard for security at the network or packet processing layer of network communication. A big advantage of IPSec is that security arrangements can be handled without requiring changes to individual user computers.

ISP - An ISP (Internet service provider) is a company that provides individuals and companies access to the Internet and other related services such as Web site building and virtual hosting.

LAN - A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

MAC Address - The MAC (Media Access Control) address is your computer's unique hardware number.

mIRC - mIRC runs under Windows and provides a graphical interface for logging onto IRC servers and listing, joining and leaving channels.

NAT - NAT (Network Address Translation) is the translation of an Internet Protocol address (IP address) used within one network to a different IP address known within another network. One network is designated the inside network and the other is the outside.

Packet Filtering - Discarding unwanted network traffic based on its originating address or range of addresses or its type (e-mail, file transfer, etc.).

PCMCIA - The PCMCIA (Personal Computer Memory Card International Association) is an industry group organized in 1989 to promote standards for a credit card-size memory or I/O device that would fit into a personal computer, usually a notebook or laptop computer.

Ping - (Packet INternet Groper) An Internet utility used to determine whether a particular IP address is online. It is used to test and debug a network by sending out a packet and waiting for a response.

PPPoE (Point to Point Protocol over Ethernet) - A method used mostly by DSL providers for connecting personal computers to a broadband modem for Internet access. It is similar to how a dial-up connection works but at higher speeds and quicker access.

PPTP (Point-to-Point Tunneling Protocol) - A protocol (set of communication rules) that allows corporations to extend their own corporate network through private "tunnels" over the public Internet. Effectively, a corporation uses a wide-area network as a single large local area network. A company no longer needs to lease its own lines for wide-area communication but can securely use the public networks. This kind of interconnection is known as a virtual private network.

RJ-11 (Registered Jack-11) - A telephone connector that holds up to four wires. The RJ-11 the common connector used to plug the handset into the telephone and the telephone into the wall.

RJ-45 (Registered Jack-45) - A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.

Static IP Address - A permanent IP address that is assigned to a node in a TCP/IP network.

Static Routing - Forwarding data in a network via a fixed path. Static routing cannot adjust to changing line conditions as can dynamic routing.

Subnet Mask - The method used for splitting IP networks into a series of subgroups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.

TCP/IP - Transmission Control Protocol/Internet Protocol (TCP/IP) is the basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet). When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP.

UTP - Unshielded twisted pair is the most common kind of copper telephone wiring. Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company. To reduce crosstalk or electro-magnetic induction between pairs of wires, two insulated copper wires are twisted around each other. Each signal on twisted pair requires both wires. Since some telephone sets or desktop locations require multiple connections, twisted pair is sometimes installed in two or more pairs, all within a single cable.

Virtual Server - Multiple servers that appear as one server, or one system image, to the operating system or for network administration

WAN - A communications network that covers a wide geographic area, such as state or country.

WINIPCFG - Configuration utility based on the Win32 API for querying, defining and managing IP addresses within a network. A commonly used util-ity for configuring networks with static IP addresses.

Specifications

Standards:	IEEE 802.3 (10BaseT), IEEE 802.3u (100BaseTX), HPNA 1.0, 1.1, and 2.0 Compatible
Protocol:	CSMA/CD
Ports:	WAN: One RJ-45 Port LAN: One RJ-45 Port HPNA: Two Standard RJ-11 Ports One RJ-11 Port with Micro Filter
Cabling Type:	10BaseT: UTP Category 3 or better 100BaseTX: UTP Category 5 or better HPNA: Standard Telephone Cable
Speed (Mbps):	WAN: Up to 10 LAN: 10/100 (Half or Full Duplex) HPNA: 1 or 10
LEDs:	Power WAN: Link, Act, Diag LAN: Link/Act, Full/Col, 100 HPNA: Link, Act, Col
Topology:	Star (Ethernet) or Daisy Chain (Home Phoneline)

Environmental

Dimensions:	7.44" x 6.16" x 2.64" (189mm x 156mm x 67mm)
Unit Weight:	0.75 lbs. (0.34 kg)
Power:	External, 5V AC, 2A
Certifications:	FCC Class B, Part 15, CE Mark Commercial
Operating Temp:	0°C to 45°C (32°F to 113°F)
Storage Temp:	-20°C to 70°C (-4°F to 158°F)
Operating Humidity:	10% to 85%, Non-condensing
Storage Humidity:	0% to 90%, Non-condensing

Warranty Information

BE SURE TO HAVE YOUR PROOF OF PURCHASE AND A BARCODE FROM THE PRODUCT'S PACKAGING ON HAND WHEN CALLING. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE.

IN NO EVENT SHALL LINKSYS' LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE, OR ITS DOCUMENTATION. LINKSYS DOES NOT OFFER REFUNDS FOR ANY PRODUCT.

LINKSYS OFFERS CROSS SHIPMENTS, A FASTER PROCESS FOR PROCESSING AND RECEIVING YOUR REPLACEMENT. LINKSYS PAYS FOR UPS GROUND ONLY. ALL CUSTOMERS LOCATED OUTSIDE OF THE UNITED STATES OF AMERICA AND CANADA SHALL BE HELD RESPONSIBLE FOR SHIPPING AND HANDLING CHARGES. PLEASE CALL LINKSYS FOR MORE DETAILS.

Contact Information

For help with the installation or operation of this product, contact Linksys Customer Support at one of the phone numbers or Internet addresses below.

Information   800-546-5797 (LINKSYS)
Tech Support   800-326-7114
RMA Issues   949-261-1288
Fax   949-261-8868
Email   support@linksys.com
Web   http://www.linksys.com
FTP Site   ftp.linksys.com

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